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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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June 29, 1998

Mr. Peter Malsch
Weyerhaeuser
PO Box 2999
Tacoma, WA 98477-2999

RE: Weyerhaeuser Response to Ecology Comments on the RI/FS Work Plan,
Chlor-Alkali Plant – Longview, Washington

Dear Mr. Malsch:

Thank you for your prompt response to my RI/FS Work Plan comments. My compliments to you and your team.

I concur with the responses provided. Further, I agree that the comments and responses do not require a reprint of the original document. With this letter Ecology considers the RI/FS Work Plan final. Please advise me as fieldwork scheduling is developed.

Contact me at if I may answer questions regarding this letter or Ecology's involvement with this project.

Sincerely,

Cris Matthews
Regional Hydrogeologist
Solid Waste & Financial Assistance Program

Enclosure

cc: Monica Tonel, US EPA Region 10

Weyerhaeuser

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June 11, 1998

Mr. Cris Matthews
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

RE: Response to Ecology Comments on the RI/FS Work Plan, Chlor-Alkali Plant - Longview, Washington

Dear Mr. Matthews:

Enclosed is our response to your letter of April 24, 1998 regarding comments on the *Remedial Investigation and Feasibility Study Work Plan, Chlor Alkali Plant*, May 1995. We have accepted all of your comments and have described how we intend to implement them. Based on conversations with Ecology, it is our understanding that Ecology acceptance of our response means that the Work Plan is final and a reprint of the document with the changes described herein is not necessary.

I realize you are enjoying a vacation abroad and will not return to work until late next week. We are prepared to begin field work as soon as you concur with this response. I would appreciate your early attention.

Sincerely,

Peter Malsch

Peter H. F. Malsch, P.E.
Senior Environmental Manager

Enclosure

Cc:

Kevin Godbout	CH 1K29
Jim Sims	Longview/43
Tom Smith	Longview/43
Kira Sykes	CH2M Hill, Portland

REMEDIAL INVESTIGATION AND FEASIBILITY STUDY WORK PLAN
WEYERHAEUSER CHLOR-ALKALI PLANT
LONGVIEW, WA

Ref.: Letter from Cris Matthews (Ecology) to Peter Malsch (Weyerhaeuser) dated April 24, 1998.

Work Plan Comments (keyed to relevant sections):

5.2.1; page 5-3

"*A pronounced reduction in mercury adsorption occurs at lower pH in the presence of chloride...*"

5.2.2; page 5-4

"*The mobility of inorganic mercury in the unsaturated zone is expected to be low, except in areas where chloride is present and pH is high.*"

"*...the mobility of other forms of dissolved inorganic mercury will be enhanced by chlorides and high pH.*"

While quoted somewhat out of context, the excerpt from section 5.2.1 above appears to contradict the two excerpts from the following section (5.2.2). The mobility of mercury is complex and controlled by a variety of factors including pH, oxidation-reduction state, adsorptive sites containing organic carbon and/or iron oxides in the soil and aquifer matrix, and -- importantly in this case -- the presence of chloride (Cl^-) ions. However, with some exceptions, mercury mobility in a dissolved phase tends to increase as pH is depressed.

> **Response:** Comment accepted. The mobility of mercury in the dissolved phase tends to increase with decreases in pH. The mobility of mercury tends to increase when chlorides are present.

6.1.3; page 6-7

The Work Plan recommends additional sediment sampling be conducted in the stormwater drainage ditch and notes that affected sediments there may contain organic as well as inorganic mercury forms. The Work Plan then maintains "*...it is not necessary to differentiate between these forms...*" based on (human) exposure routes and IRIS risk information.

While on-site human exposure to the sediments -- either in the ditch or the river adjacent -- is probably of low concern, the methylmercury (organic) forms possibly present in those sediments are especially toxic, mobile, and bioaccumulate readily, posing a risk to the major environmental receptor for this site, the Columbia River. Remedial investigation for at least one other Chlor-Alkali facility in western Washington (ENSR, 1994) has included mercury speciation studies to characterize possible risk and aid the development of remediation strategies. Would it not be helpful to characterize the contaminant form(s) as part of the sediment "nature and extent data" category?

Response: For the purposes of determining risk from past Chlor-Alkali Plant releases, it would be helpful to know the form of mercury present in sediments, when that mercury is a result of releases from the plant. Therefore, we propose to follow the RI and collect sediment samples from the Columbia River and determine if mercury is present at levels that would indicate there have been releases from the plant that have been deposited in the sediments. There is information currently available on mercury concentrations in sediments both directly upstream and downstream from the plant. If it is determined that mercury is elevated near the plant, then we propose to perform a second phase of sediment sampling to determine the species of mercury that are present. We will work with Ecology to determine the number and location of sediment samples. This field work could be done in January, after the first sampling program, which is scheduled for completion in mid-November. See the schedule in Figure 8-1 for the dates of sampling. The process would be as follows:

- collect 20 sediment samples from river as stated in the RI report and analyze for total mercury, grain size, and TOC
- determine if there are elevated mercury concentrations associated with historic releases from the plant. If so, then:
- collaborate on the number of samples to be collected, then:
- collect additional sediment samples and evaluate mercury speciation, and finally:
- evaluate the results in the RI report

Using this two step approach has the advantage of first determining if there is a problem, and then collecting only the data needed to determine the magnitude of the problem.

7.1.2; page 7-7

Near the end of a discussion of the hydraulic properties, connection, and response in the local alluvial and basalt aquifers, the Work Plan states: "*This response [between basalt groundwater levels and tidal river stage fluctuations] may suggest that a poor hydraulic connection exists between the two systems or that there is good hydraulic connection but low basalt permeability.*" Further, "*...low groundwater flux [from the basalt] into the river*", and "*...apparently limited hydraulic connection of the [basalt] groundwater zone with the Columbia River...[suggest] that mercury discharge...into the river is not significant.*"

Precluding possible contaminant flux into the river via flow in the basalt may be premature. The HLA groundwater characterization (1991) found an interconnection between saturated alluvium and basalt during aquifer testing despite dissimilar hydraulic conductivities. Groundwater flow in the basalt is apparently controlled by the degree and nature of fracturing. Flow would be complex and non-linear compared to flow in the granular alluvial materials, but hydraulic connection with the river to some degree should probably be assumed. Given the unknown fate and transport of mercury in the basalt, this possible pathway to the river should not be discounted.

Response: The possible contaminant flux into the river via flow in the basalt is minimal, but should not be discounted. The data collected during the last ten years of groundwater monitoring and during the Remedial Investigation will be used to evaluate the flow in the basalt.

7.4.7; page 7-16

It is implicitly or explicitly assumed throughout the Work Plan that the principal environmental receptor at the site is the Columbia River. "*If...the Columbia River is included in a confirmed [contaminant] pathway as a result of completion of the RI, an environmental assessment will be performed.*" Given the principal pathway for contaminant flux off-site is almost certainly shallow groundwater, and that groundwater is in hydraulic connection with the river, it is probably logical to pre-suppose an environmental assessment which includes the river will be necessary.

Response: If it is confirmed during the Remedial Investigation field work that there is exposure and a pathway to the Columbia River, then the environmental assessment will be performed. It is agreed that shallow groundwater is most likely in hydraulic connection with the river; what is not known is whether there has been an impact to the river from mercury releases from the Chlor-Alkali Plant. If it is confirmed in the RI that there is exposure in the river resulting from site releases and a pathway exists, then the environmental assessment would be performed and presented in the RI report. If there is no exposure or pathway, then the environment assessment would not be performed.

Section 8

I presume the project schedule will be revised to reflect new timelines and milestones.

Response: The schedule in the Work Plan should be moved forward three years. So, 1995 should be 1998 and 1996 should be 1999. The months do not change. This schedule would then reflect the schedule given to Ecology in our February 23, 1998 kickoff meeting.